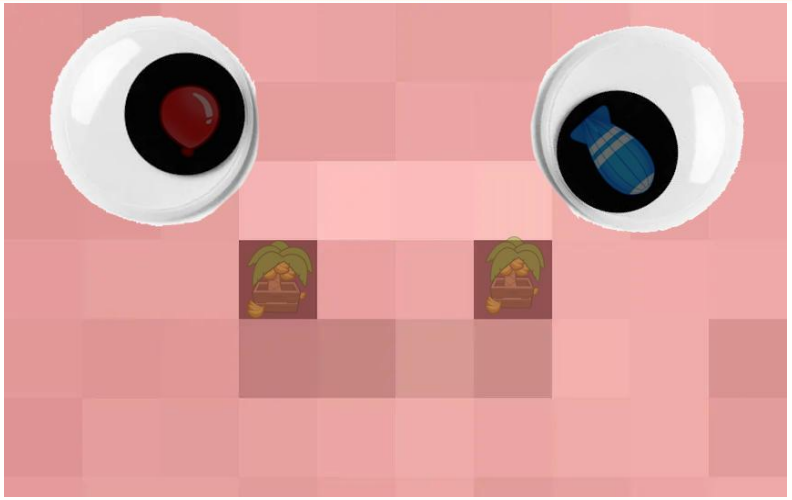
# 01-T2 MineMobs Tower Defense



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# Team Roles

- Ashley Ahn – Design
- Matthew Elledge – Programming
- AnnaGrace Gwee – Design
- Bryan Nguyen – Documentation
- Logan Slicker - Programming






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# Preface

The KSU Minecraft server hosts many game modes, a number that is only growing! We wish to design and add our own game to the roster: MineMobs Tower Defense!

The goal is to implement a successful Tower Defense game, similar to Bloons Tower Defense or Plants vs Zombies, utilizing Minecraft as its setting.

With the tools of IntelliJ as our IDE, the Minecraft Plugin from the IntelliJ Marketplace, and Paper API's tools, we hope to implement a fun and unique game mode to the KSU server!


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# GDD - Gameplay


## Objective: Survive

- Defend your village!
- Defend against waves of hostile mobs!
- Build Towers!
  - Arm them with villagers and tools!
  - Train your villagers to be stronger!
  - Loot the mobs for money for the upcoming waves!
- Don't let your villagers (lives) drop to 0!

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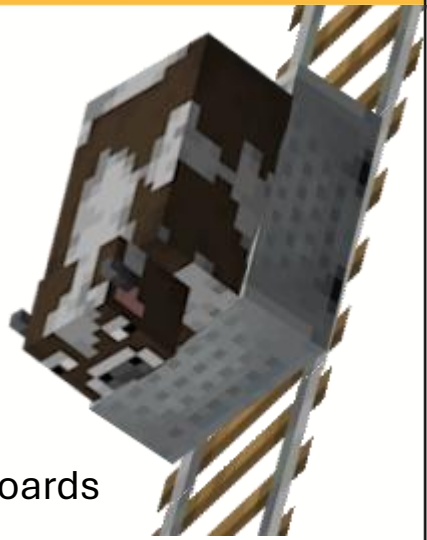
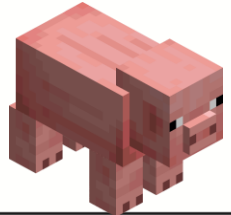
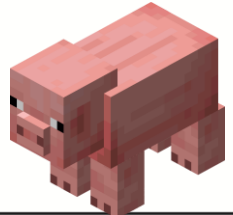
# GDD - Mechanics

- Players can place and upgrade towers with their money
- Mobs must walk their map path
- If a mob is defeated, they go down a tier or are defeated
  - Every hit of damage provides $1
- If a mob reaches your village, you lose a villager life
  - Players will receive no money
- Players may save their game at any time
- Player time spent on the campaign will be utilized for leaderboards







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# GDD – Story & Design

- After completing each map, players can get a sneak peek into the background story behind the Game Mode
- The Game World will look similar to BTD6, with defined paths for mobs, though differing in that there will be spots for towers to be built.
- Multiplayer support, while not a main priority, will hopefully be implemented so players can work together to defeat the incoming mobs




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# GDD – Levels & Interface

Our goal is to design two main maps for this project, with the first map being a relatively easy to clear map, and the second ramping in difficulty.

If we have more time, designing a tutorial level and harder difficulty levels, alongside an endless mode may be worked upon.

A GUI will be utilized for Map Selection, Tower Interaction, and starting waves.

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# GDD – Architecture

**Core Layer**

- Main Class
- Config
- Runtime Calls
- Manages Information

**Game Logic Layer**

- Handles Rounds
- Handles Mob Spawn
- Handles Tower Spawn
- Handles AI Functions

**Player Interaction Layer**

- Listens for Commands
- Updates GUI

**Persistence Layer**

- Holds Player Saves
- Updates Leaderboard
- Handles Data Synchronization

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# Challenges and Solutions

The main challenge during Milestone 1 was working on the Game Design Document in a way that felt like the information was reasonable for a project that was not to be coded yet.

Thinking ahead on what we would need to create the project but on "pen and paper" was a challenge, but it was alleviated thanks to the SRS and SDD we had completed a week before the milestone, in which it underlined the requirements and design of our project prior.

From there, we modified it to include the aspects of other Game Design Documents provided to us.

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# Outlook & Next Steps

The next goal to complete, should our Game Design Document be approved, would be to accomplish a working prototype of our Tower Defense game that functions in our local testing environment so that it can be tested on the server.

We also plan on completing the interfaces for users alongside the map designs for the player's campaigns.

We predict that there will be a lot of early trial and error to see how exactly our game mode will be implemented and whether it is to our liking or not, and based on feedback from our professor, our predicted times to accomplish this may be longer than expected.

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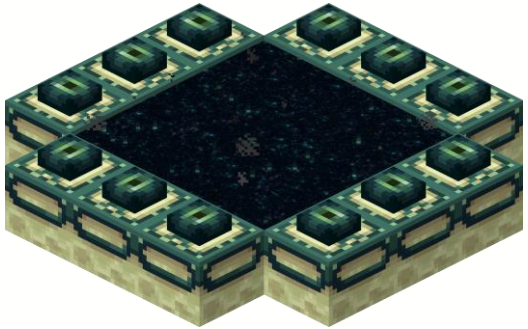
# Considerations Moving Forward

The roadblocks that we foresee in the coming weeks will likely come from accomplishing a consistently working prototype by Milestone 2.

It is expected to function but may have issues regarding performance on both planned maps, tower functionality working in tandem with mobs and player values, and bugs specific to implementing the game mode onto the server.

Other things to consider will be balancing the workflow between the class and the project, as while the items are similar, the formats are different.

Though, should we allocate proper time to work on these tasks, the project should run smoothly.



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## Questions and Feedback?

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